

In rejecting a claim under the second paragraph of 35 U.S.C. 112, it is incumbent on the examiner to establish that one of ordinary skill in the pertinent art, when reading the claims in light of the supporting specification, would not have been able to ascertain with a reasonable degree of precision and particularity the particular area set out and circumscribed by the claims.

See also *In re Hammack*, 427 F.2d 1378, 166 USPQ 204 (CCPA 1970).

Secondly, the requirement to be followed by the Examiner as set forth in *Ex parte Wu* has not been accomplished. The Action merely asserts without any foundation or explanation whatever that certain terms used in the claims render the claims indefinite. Thus, no *prima facie* case of indefiniteness has been established by the Examiner, and this alone is sufficient to render the rejection inapplicable.

Moreover, the actual facts are these:

- A) The conjunction "and/or" is perfectly clear. It is defined in the Webster's II New Riverside Dictionary (Copyright 1984, 1988, 1994 by Houghton Mifflin Company) as follows:

Used to indicate that either *and* or *or* may be used to connect words, phrases, or clauses.

- B) The word "oxidizing" has been taken out of context. In Claim 124, where it appears, the word is used as follows:

oxidizing co-product inorganic bromide salt in said solution to form elemental bromine.

This phrase is perfectly clear. It calls for conducting a well-known chemical step to accomplish a specified known result. It matters not exactly how it is done as those of ordinary skill in the art would know how to do this. Moreover, the process of this claim does not depend on the specifics of *how* it is done. Instead,

all that is required is that it *is* done.

- C) The expression "is oxidized" has also been taken out of context. For example, in Claim 130, in which these words appear, the expression is used as follows:

and wherein co-product inorganic bromide salt in said solution is oxidized to form elemental bromine.

This phrase is perfectly clear. It calls for conducting a well-known chemical step to accomplish a specified known result. It matters not exactly how it is done as those of ordinary skill in the art would know how to do this. Moreover, the process of this claim does not depend on the specifics of *how* it is done. Instead, all that is required is that it *is* done. The same expression also appears in Claim 131 with phraseology as equally clear as that of Claim 130.

Consequently, the rejection under 35 U.S.C. 112 is without merit and is deemed erroneous.

The rejection of Claims 1-131 under 35 U.S.C. 103(a) on Rogers I (2,392,505), or Rogers II (2,398,598), or Paterson I (2,779,764), or Paterson III (3,147,259), or Wolf et al. (2,920,997), or Waugh et al III (3,121,715), or Cole (4,532,330), or Girard et al I (4,560,766), or Girard et al II (4,654,424), or Puzig (4,677,130), or Lee et al (4,745,189) or Bhattacharya (WO 97-43264) or Jolles ("General Methods of Bromination", Bromine and its Compounds, 1966, Ernest Benn, London, page 365), is inapplicable. None of these references even hints at, muchless makes obvious, a process in which *all* of the necessary components for the halogenation reaction are fed concurrently or substantially concurrently so that the pH is maintained within specified limits and the desired product

is precipitating from the reaction mixture. Instead, what these references teach is as follows:

- A) Rogers I expressly teaches at Page 1, Column 2, lines 6-12:

In accordance with the present invention, a disubstituted hydantoin is **reacted** with chlorine or other halogen **in** an aqueous medium while maintaining the reaction mixture in an alkaline condition and stopping the reaction **when the theoretical amount of the halogen required to form the monochlorohydantoin has reacted.**

(Emphasis supplied)

The term "reacted" says nothing about how the reactants are brought together. Moreover, not only is the reaction conducted **in** the aqueous medium, but in addition it would not be practical to stop the reaction in the manner specified by Rogers I if the reagents were concurrently being fed. Thus in reality Rogers I leads away from the presently-claimed subject matter. We see nothing elsewhere in Rogers I that supports a contrary position. For example, while Rogers I states at Page 1, Column 2, lines 29-31 that a small amount of alkali may be present initially, and further amounts may be added during the course of the reaction, this is not suggestive of adding **all** of the components concurrently or substantially concurrently in the manner specified in the present claims.

- B) Rogers II expressly teaches at Page 1, Column 2, lines 4-16:

In preparing the 1,3-dichloro-5-methyl-5-isobutyl hydantoin desired, the 5-methyl-5-isobutyl hydantoin is dissolved in an aqueous alkaline solution. * * *

Gaseous chlorine may now be passed into the aqueous alkaline solution containing the dissolved hydantoin.

Clearly there is no way by which a suggestion of concurrent feeding or substantially concurrent feeding of all required components as specified in Applicants' claims can be derived from this teaching. And we see nothing elsewhere in Rogers II that supports a contrary position.

- C) Paterson I expressly teaches at Column 2, lines 3-8:

In one method of practicing the present invention, a 5-substituted hydantoin is mixed with water containing known amounts of an alkalizing agent such as sodium hydroxide, sodium carbonate, sodium bicarbonate, or the like, and bromine is added to the mixture . . .

No other method is described in Paterson I, and clearly the method that is disclosed in Paterson I is not suggestive of the presently-claimed subject matter. We see nothing elsewhere in Paterson I that supports a contrary position.

- D) Paterson III expressly teaches at Column 3, lines 19-26:

It has been found that the bromination of the present process proceeds in a manner which can be best described by consideration of the theoretical sequences involved. When the N-hydrogen carrier precursor is placed in the aqueous alkaline medium and treated with the requisite amount of bromine . . .

Here again there is nothing to suggest concurrent or substantially concurrent feeds of all the required components in the manner called for in the present claims. And we see nothing elsewhere in Paterson III that supports a contrary position. Thus while this reference says at Column 3, lines 40-43 that there is no need to preserve any sequence, it is clear that the sequence referred to relates to the feeds of

bromine and chlorine as is shown by the rest of the sentence which says that the reactions may be carried out simultaneously by introducing chlorine at the same time the bromine producer is added.

- E) Wolf is still another deficient reference. In each of its Examples I-V, chlorine gas is passed into a solution or slurry containing the other components. Thus there is no way of finding the presently-claimed subject matter obvious in view of Wolf. We see nothing elsewhere in Wolf that supports a contrary position.
- F) Waugh III points out at Column 2, lines 1-6:

In accordance with the present invention, an N-brominated organic compound is produced by *reacting* bromine with one of the above N-hydrogen organic compounds in an alkaline or basic solution, and in the presence of a chloro agent, *i.e.*, either chlorine or the corresponding N-chloro organic compound.

[Emphasis Added]

The term "reacting" says nothing about how the reactants are brought together. Thus, there is no suggestion here to concurrently or substantially concurrently feed all of the required components in the manner specified by the present claims. And we see nothing elsewhere in Waugh III that would support a contrary position.

- G) Cole describes his halogenation process at Column 2, lines 47-57 as follows:

These materials are prepared by the reaction of dimethylhydantoin, and the corresponding source of halogen in water. The halogenation step is carried out in the presence of base to neutralize the acid formed in the halogenation step. * * * The inorganic source of -OH and the halogenating agent are added concurrently at such a rate that the pH is maintained in the range of about 6.8-7.0 . . .

It is clear from this description that the halogenating agent and the base are concurrently added to the dimethylhydantoin, and thus there is no suggestion of concurrently or substantially concurrently feeding all of the required components in the manner of Applicants' claims. We see nothing elsewhere in Cole that would support a contrary position.

- H) Girard et al. I is still another deficient reference. Thus in Example Three the product was formed by dissolving methylethylhydantoin in water and adding chlorine gas to the mixture. pH control was maintained by periodic addition of sodium hydroxide solution. In Example Six the product was prepared in the same manner as in Example Three. And in Example Seven the product was prepared by charging the hydantoin, sodium bromide and distilled water to a flask and then feeding chlorine at a controlled pH using a solution of sodium hydroxide. None of these procedures of Girard et al. I is suggestive of concurrently or substantially concurrently feeding all of the required components in the manner specified in the present claims. We see nothing elsewhere in Girard et al. I that would support a contrary position.
- I) Girard et al. II is indicated to be a division of Girard et al. I and a cursory inspection indicates that the disclosures appear to be the same. Thus, the comments on Girard et al. I are also applicable here.
- J) Puzig describes in Example 1 the synthesis of 1-bromo-3-chloro-5,5-dimethylhydantoin by initially charging water, followed by dimethylhydantoin, to a reactor. Next, bromine and an aqueous solution of sodium hydroxide and then chlorine and an aqueous solution of sodium hydroxide were added with pH being controlled at 6.8-7.0. As in the case of each of the above references, there is no suggestion of concurrently or substantially concurrently feeding all of the required components in the manner specified in the present claims. We see nothing elsewhere in Puzig to support a contrary position.

- K) The process disclosed in Lee et al. as exemplified in Example I involves charging sodium hydroxide, water, 5,5-dimethylhydantoin, and dichloromethane into a flask. Then, bromine was feed into the reactor. Next, chlorine was fed into the reactor. Examples II and III of Lee et al. used the same procedures as in Example I. The procedure in Example IV of Lee et al. is along the same lines as that of Example I. Thus, there is no suggestion in Lee et al. of the presently claimed subject matter.
- L) Bhattacharya provides a description in Example 7 of the production of 1,3-bromochloro-5-methyl-5-propylhydantoin. The process involved adding 5-methyl-5-propylhydantoin and water to the reaction flask. To this suspension were added bromine and aqueous sodium hydroxide solution simultaneously at a pH of about 7. Once again, there is no suggestion here of concurrently or substantially concurrently feeding all of the required components in the manner specified in the present claims. And we see nothing in Bhattacharya that would support a contrary position.
- M) Jolles describes two complete bromination procedures. In addition the beginning of another bromination is referred to at the bottom of the page. In the case of producing N-bromosuccinimide, succinimide is mixed with crushed ice and a solution of potassium hydroxide in water. Bromine is then slowly added to this mixture. The next preparation is of 1,3-dibromo-5,5-dimethylhydantoin. In this case, 5,5-dimethylhydantoin and sodium carbonate are dissolved in cold water. Thereafter bromine is added at a rate to keep the temperature below 25 °C. The fragmentary description of producing N-bromophthalimide involves forming a solution of sodium hydroxide in water, adding phthalimide to the solution and then adding bromine while maintaining temperature control. Clearly none of these process descriptions is suggestive of the subject matter of the present claims. From the above, it is clear that not one of these various references can legitimately

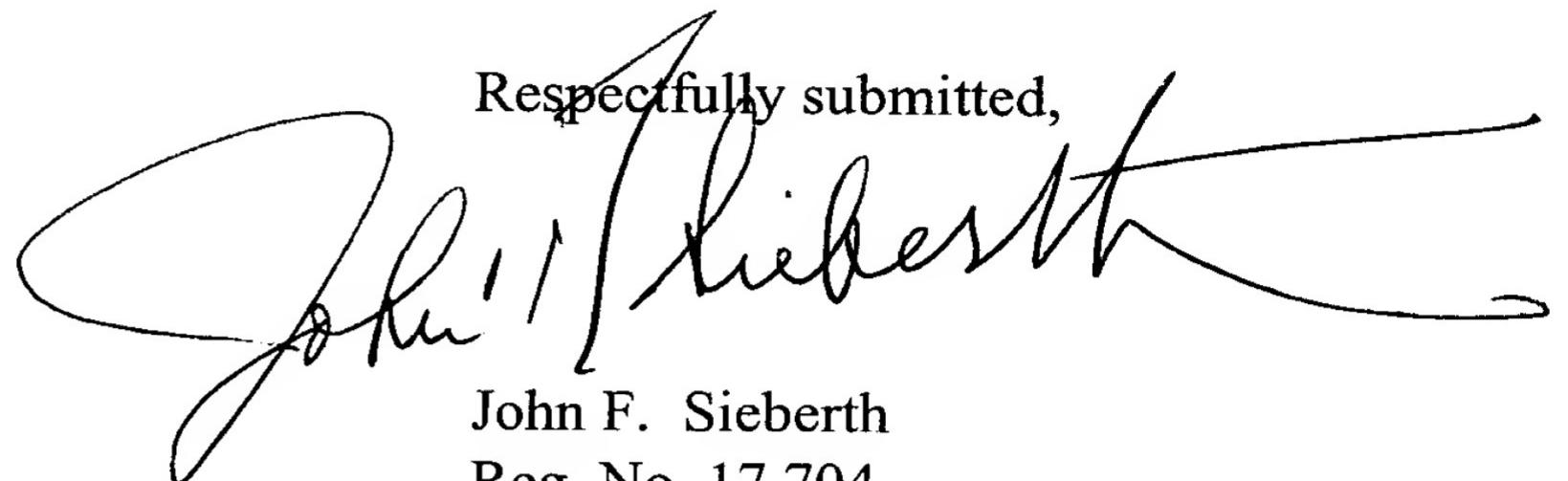
be said to render obvious the subject matter of Applicants' Claims 1-131.

In the sentence bridging pages 2 and 3 of the Action, the observation is made that the references disclose the N-halogenation of compounds having at least one halogenatable amido or imido nitrogen by **reacting** such compound with a halogenating agent in the presence of an inorganic base and water. Specific passages in the references are then cited to support this observation. However, Applicants' Claims are not drawn to "reacting". Instead, Applicants' Claims call at least for conducting the process with concurrent or substantially concurrent feeding of **all** of the required components in particular ways, which is not suggested muchless made obvious by the references. Thus, the premise on which the rejection is based does not support the rejection. Moreover, we wish to respectfully point out that the conclusion on page 3 of the Action that it would be obvious to N-halogenate compounds having a halogenatable amido or imido nitrogen by the method of the references, is based on an erroneous premise. The presently-claimed process does not involve the method of any of the references as is made manifestly clear hereinabove. It is an entirely new process. The remainder of the conclusion on page 3 of the Action suggests that "optimum conditions" are here involved. However, this is not so. Since Applicants' claims are directed to completely novel and unobvious subject matter, no prior art process is being optimized. Instead, new, highly beneficial process technology is claimed in the present application.

For the reasons given above, it is believed that the Claims in the case are in condition for Allowance. Notification to this effect would therefore be appreciated. If however, any matters remain requiring further consideration, the Examiner is respectfully requested to telephone the undersigned so that such matters can be discussed, and if possible, promptly resolved.

Please continue to address all correspondence in this Application to Mr. Philip M. Pippenger at the address of record.

Respectfully submitted,



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CERTIFICATE OF MAILING

I hereby certify that in accordance with standard business practice, this paper (along with any referred to as being attached or enclosed) is to be deposited on the date shown below with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231.

September 18, 2001
Date

Veronica S. Kesler